

# **The Use of Riparian Buffers to Reduce Nonpoint Source Pollution From Development**

A Report to the Maine Legislature's Joint Standing Committee

On Natural Resources



Submitted by  
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## Contents

Introduction .....	3
Assessing the Need: A Summary of Buffer Information .....	3
Process Used to Evaluate Buffer Options.....	5
Stakeholder Group Formation.....	5
Criteria for Success.....	5
Ideas for Encouraging Establishment and Maintenance of Buffer Strips.....	6
Incentives .....	6
Education .....	6
Other .....	7
Regulatory .....	7
Discussion of Non-Regulatory Options .....	7
Discussion of Regulatory Options.....	11
Recommendations .....	14

## **Introduction**

In April 1998, the 118<sup>th</sup> Maine Legislature enacted 1998 P.L. Ch. 748, “An Act to Reduce Nonpoint Source Pollution from Existing Sources, Amend the Shoreland Zoning Laws and Amend the Site Location of Development Laws.” That law, in part, required the Department of Environmental Protection to consult with interested persons and relevant state agencies, and report back to the joint standing committee of the Legislature having jurisdiction over natural resource matters by January 15, 1999, as follows:

“1. The department shall submit a report that includes an evaluation of options and recommendations for improving the implementation and maintenance of buffer strips along water resources, including small streams, except that the report may not address buffer strips on land used for agricultural or silvicultural activities. The department shall consider both regulatory and non-regulatory approaches and shall evaluate at least the following options: Changes to the mandatory shoreland zoning laws to include first order streams in the shoreland zone and changes to the natural resources protection laws to apply those laws to the cutting of vegetation adjacent to streams.”

The Department developed this report in accordance with the above mandate. To assist in its preparation, the Department convened a stakeholder group known as the Buffer Work Group in July. This group included members from local and state agencies, as well as business and environmental interest groups. An initial meeting was held on July 28<sup>th</sup> at which national experts presented information on the function of buffer strips with respect to agriculture, forestry and developed areas. (Separate work groups were also convened to consider agriculture and forestry issues; discussion of those issues is not included in this report).

## **Assessing the Need: A Summary of Buffer Information**

During its deliberations, Buffer Work Group members emphasized the need to have data to support any recommended actions directed at increasing the use of buffer strips in Maine. Much data on the subject is available from outside Maine, including a collection of papers from the Center for Watershed Protection in Maryland for the July 28<sup>th</sup> workshop (See Appendix 1).

An important attribute of streams is the presence of an aquatic community. Small, headwater streams are very important ecologically in that they are major producers of macro-invertebrates (bugs) that provide a food source for larger aquatic organisms, including fish, both at that point and further downstream. A number of studies nationally have linked the health of the aquatic community in streams with the density of development within the watershed, and particularly the percent of the watershed which is in impervious cover (See Center for Watershed Protection article “The Importance of Imperviousness” in the Appendix). These studies suggest that the aquatic communities can be expected to show signs of impairment in streams with watersheds that have 10% or more impervious cover and that communities in streams with watersheds of 25% or more impervious cover will be severely degraded.

Preliminary evaluation of recent data on streams in Maine suggests that this relationship holds true in Maine as well. Of the 27 1<sup>st</sup> to 3<sup>rd</sup> order streams for which adequate benthic macroinvertebrate data was available, 16 had percent imperviousness estimated at 9% or less. Of these, only 2 had macroinvertebrate communities that failed to meet the aquatic life standards for Class B streams, or having no detrimental change. One of the two streams that did not meet Class B standards was less than 3% impervious but located in a very agricultural watershed. All of the 11 streams with watersheds of 10% or more imperviousness failed to meet the Class B standard, an indication that the communities were at least negatively impacted, and 8 of these failed to meet even the Class C standard, indicating significant impairment (See Figure 1).

**Figure 1.** *Percentage of impervious area in watershed vs. Water quality for selected streams in Maine*

Stream	Town	% Impervious	Quality
Stinking Brook	T5R9 NWP	<3	A
Footman Stream	Exeter	<3	A
Babel Brook	T5R9 NWP	<3	A
Ashworth Brook	T5R9 NWP	<3	A
Allen Stream	Exeter	<3	A
French Stream	Exeter	<3	C
Little River	Gorham	5	A
Royal River	New Gloucester	5	B
Pleasant River	Windham	7	A
Frost Gully A	Freeport	7	A
Collyer Brook A	Gray	7	A
Kimball Brook	S. Portland	7	NA
Cold Spring Brook	Gorham	8	B
Johnson Brook	Gorham	9	B
Frost Gully B	Freeport	9	B
Collyer Brook B	Gray	9	B
Meadow Brook	Bangor	*10	NA
Clark Brook	Westbrook	11	NA
Farm Brook	Gorham	12	C
Tannery Brook	Gorham	13	C
Trout Brook	S. Portland	13	NA
Beaver Dam Brook	Westbrook	13	NA
Concord Gully	Freeport	14	C
Interstate Stream	Bangor	*15	NA
Long Creek	S. Portland	17	NA
Trailer Park Stream	Bangor	*20	NA
Airport Stream	Bangor	*30	NA

\*Estimate based on  
limited data

Quality of the aquatic community

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A = as naturally occurs

B = some sensitive species lost, but no detrimental change

C = impacted, but structure and function maintained

NA = non-attainment, impaired, no structure or function

The relationship between the density of development within a stream's watershed and the health of the aquatic community is not perfect. In other words, a given percent imperviousness will not always yield the same quality community. Other factors come into play, such as the type of impervious land use in the watershed, the nature of the adjacent pervious land uses (e.g.; lawn, forest, cornfield, barnyard), the location of the developed areas within the watershed and the condition of the riparian area adjacent to the stream. A recent study in the State of Washington suggests that differences in riparian quality can explain much of the variation in stream response to watershed imperviousness. In streams with similar watershed imperviousness, *the streams with significant forested riparian areas tended to have healthier aquatic communities than those where the riparian buffer had been largely eliminated.*

. The aquatic communities of streams in developed watersheds are subject to a variety of stresses including sedimentation, elevated summer temperatures, toxic pollutants, severe fluctuations in flow, loss of the structural habitat provided by woody debris, and loss of leaf-fall food supply. Maintenance of wooded

riparian buffers which shade the stream provide leaf-fall and woody debris, eliminating three of these stresses making it more likely that sensitive aquatic organisms can survive the remaining stresses.

In Maine, the stream watersheds in many of our more urban areas exceed 10% imperviousness, and, as suburbs and bedroom communities grow and commercial development expands, more and more stream watersheds will exceed the 10% threshold (*Can this be quantified?*). Maintenance of riparian buffers on the streams within these developing watersheds will help reduce the impacts of development by minimizing temperature effects and providing food and in-stream habitat. Buffers will also improve the quality of contaminated stormwater from developed areas provided the stormwater is not channeled when it passes through the buffer.

## **Process Used to Evaluate Buffer Options**

### *Stakeholder Group Formation*

The Department identified a list of organizations known or expected to have an interest in nonpoint source pollution and the role of buffer strips. Individuals from these organizations were invited to the initial meeting in July. At that meeting, attendees were asked to identify other groups who were not at the table, but should be invited. Invitations were sent to these organizations as well. Several other individuals also asked to participate and were added to the group. While not all members of the group attended every meeting, all were included on a mailing list and sent periodic updates.

Group Facilitator: Ann Gosline

### Stakeholder Participants

American Society of Consulting Engineers, Ian Broadwater  
Congress of Lake Associations, Cynthia Kuhns  
Lakes Environmental Association, Peter Lowell  
Maine Association of Conservation Commissions, Bob Cummings  
Maine Association of Conservation Districts, Bud Benson  
Maine Audubon, Jennifer Cost  
Maine Auto Recyclers Association, Leslie Cosgrove  
Maine Chamber & Business Alliance, Chris Hall  
Maine Department of Environmental Protection, Rich Baker, Karen Hahnel, Don Witherill  
Maine Department of Transportation, Chris Olson  
Maine Land Use Regulation Commission, Martin Womer  
Maine Merchants Association, Jim McGregor  
Maine Municipal Association, Geoff Herman  
Maine Real Estate & Development Association, Alec Bruce  
Maine Water Utilities Association, Jeff McNelly  
Naples, Town of, Code Enforcement Officer, John Thompson  
Natural Resources Council of Maine, Nick Bennett  
Portland Water District (Maine Water Utilities Assoc.), Phil Boissoneault  
Sheepscot Valley Conservation Association, Jeff Reardon

### *Criteria for Success*

The work group agreed to these criteria for evaluating options:

- ☐ Protection of watersheds, including the ecology of lakes, streams, tidal estuaries and other coastal areas.
- ☐ Protection of drinking water quality

- ☐ Effective:
  - address use of land by all landowners that affects water bodies
  - address current perception of the ideal (open view to water)
  - address major pollution sources
- ☐ Equitable:
  - address pollution sources fairly
  - make sure restrictions are clearly defined
  - apply in both LURC and DEP territory
- ☐ Cost effective: reasonable protection at reasonable cost
- ☐ Doable and Supportable:
  - measures implemented at the local level are practical and manageable
  - implementation has support at local level
  - where possible, looks to enforcement of existing regulations
  - where possible, makes development of buffers advantageous to property owners
  - takes public safety into account

### *Ideas for Encouraging Establishment and Maintenance of Buffer Strips*

Stakeholders participated in a brainstorming session during their first meeting to develop a list of possible ideas for encouraging the use of buffer strips. From this list, a smaller set of ideas was selected as “most promising.” Those ideas are identified in this report as “options” and are discussed in the sections that follow the list below.

#### Incentives

- ☐ Property tax reduction for establishing and maintaining buffers, as per Tree Growth
- ☐
- ☐ Increase taxes for those who don't establish buffers
- ☐ Income tax credit
- ☐
- ☐ Sales taxes
- ☐ Carry forwards for tax credits
- ☐ Technical assistance / cost share (along with education)
- ☐ Use of Clean Water Act Plan funds
- ☐ Use of conservation easements
- ☐ Purchase/transfer development rights from buffer areas

#### Education

- ☐ Educate homeowners: “Don't mow down to the water”
- ☐ Mandated education for businesses, municipalities, residents
- ☐ Public education campaign (with compelling story)
- ☐ Fund studies to evaluate effectiveness of buffers in Maine environment
- ☐ Dissemination of studies
- ☐ Target education differently for buffers on 1st order streams and for large streams/lakes
- ☐ Involve kids

## Other

- ☐ Grants - pilot projects - Roads projects
- ☐ MDOT - assign higher priority to NPS effects v. other maintenance; be a role model
- ☐ Link with effective enforcement that addresses other major sources of pollution
- ☐ Hybrid regulatory/non-regulatory: Contract zoning / Regulatory trade-off
- ☐ Enable municipality to adopt ordinances - provide model(s)
- ☐ Identify priority watersheds or particular 1st order streams for protection
- ☐ Develop an "Adopt a Buffer" program
- ☐ Make examples of those engaging in bad management practices
- ☐ Certification and awards program for developers ('Green Developer')

## Regulatory

- ☐ Change local building permit requirements
- ☐ Enforce existing regulatory mechanisms
- ☐ Do studies to determine which existing sources are greatest polluters in Maine
- ☐ Compile/evaluate national information applicable to Maine – look at whole picture of pollution sources
- ☐ Set higher standards for state-controlled roadways/projects
- ☐ Expand NRPA to cover cutting of vegetation adjacent to 1st order streams
- ☐ Add 1st order streams to Shoreline Zoning
- ☐ Use/disseminate aerial photos to monitor encroachment into shoreland zones (to CEO's)
- ☐ When seasonal camps are converted to year round -- Require the creation of a road maintenance association and maintenance of road (also septic systems)
- ☐ Shading requirements for small streams

## Discussion of Non-Regulatory Options

### *Incentives*

- ☐ Support and expand technical assistance/cost share programs that are coordinated with education programs, and which would 1) provide technical assistance to landowners seeking to develop or maintain buffers and 2) provide cost sharing for the cost of developing/protecting buffers.

**Background.** The DEP, working with local and regional agencies (especially Soil & Water Conservation Districts), provides landowners with technical assistance and limited grant funding for carrying out water quality protection work in watersheds. In June 1998, Maine voters approved a \$500,000 bond to support development and implementation of watershed management plans. This money, along with another \$500,000 available annually through Section 319 of the Clean Water Act (Nonpoint Source Program), is made available through a competitive grant application and helps support watershed protection. The money is generally not directly available, however, for cost sharing with individual landowners. A request for an additional \$500,000 in bond money for watershed protection work was not authorized by the Legislature in the last session to go to referendum.

Models for cost share and technical assistance programs are available for owners of agricultural and forest lands, offered by the USDA Natural Resources Conservation Service through its EQUIP program and its Conservation Reserve Program. The Maine Forest Service's Stewardship Incentive Program is another model for cost share and technical assistance, specifically aiding landowners to establish riparian buffers on forestlands. The University of Maine Cooperative Extension Service provides publications and other information to individuals on a number of conservation topics. The Extension Service is a very appropriate organization for conducting riparian buffer instruction programs for the general public in conjunction with

DEP. Extension could also add literature on development riparian buffers to its list of available publications

The State Revolving Fund is a low-interest loan program available to municipalities and quasi-municipal entities to carry out projects for water quality protection. Federal guidance for the program promotes establishment/protection of buffer strips as a fundable activity. Repayment, however, is required.

DEP staff plan to continue seeking out opportunities to provide assistance through use of existing resources and through seeking additional funding opportunities.

- ❑ Encourage use of conservation easements and/or the purchase/transfer of development rights to buffer areas. This idea includes: 1) using education at the state level to help the work of local land trusts; 2) providing coordination of these and other efforts within watersheds, potentially providing matching dollars from the state; and 3) considering use of state resources (yet unidentified) to purchase easements/development rights.

**Background.** The State of Maine's efforts to establish and protect riparian buffers can be substantially enhanced by cooperative efforts with conservation land trusts. These nonprofit organizations, of which Maine has some seventy-six, work with landowners by individual counseling and diplomacy to design and implement long-term land conservation measures. Most often, Maine land trusts protect land by accepting conservation easements granted voluntarily by landowners. Conservation easements institute land use restrictions customized to protect the particular conservation values of the site and adjacent areas. Because of the individualized, voluntary nature of the process of creating conservation easements, land trusts often can bring about protection of specific resources to a degree that the public -- and the particular landowners -- would object as a governmental regulation. Some land trusts work with the landowners to implement best management practices on the land. Land trusts often accept gifts of land to be conserved, or where necessary, may raise funds to purchase land outright.

An outstanding aspect of land trusts is their ability to protect connected land areas through a series of individual transactions with receptive landowners over long periods of time. Land trusts plan and work toward their conservation efforts systematically over decades. In regard to riparian buffers, where a landowner's perspective on the buffer area is generally from the upland to the waterbody and limited to the sidelines of the parcel, a land trust's perspective is usually of the stream or river corridor as a whole. This view of the buffer is perpendicular to that of the landowner and places the buffer within an even broader context of the entire watershed. This difference is significant; each property's riparian buffer may appear insignificant to an individual landowner, but each may be a key element of a stream corridor protection program of the land trust. Such a comprehensive perspective of the stream buffer as a resource can justify a land trust's efforts with a degree of dedication that might not appear warranted for a single parcel's buffer in isolation.

Because land trusts assist landowners on a voluntary, person-to-person basis, they bring to conservation projects an element of human, community values that is simply not present in the application of government regulations. For example, landowners who give, or even sell, conservation easements or fee interests to land trusts, or who institute other conservation measures with one of these nonprofit charities, often receive public recognition and accolades for many years as a result of their good acts. Such intangible benefits of implementing voluntary conservation measures are a valuable piece of the conservation program that land trusts offer.

Additionally, in order to complete particular projects, land trusts may be able to raise money locally, or to receive foundation or corporation grants, or other funds from the private sector that simply would not be available for the DEP to conserve a riparian buffer. Such funds may defray project costs, serve as revolving funds to allow important parcels to be held for subsequent purchase by the state or federal government, or perform a host of other possible roles. By working with land trusts to protect riparian buffers, the State of Maine greatly broadens the number, variety, and versatility of available conservation options.



- ❑ Create an income tax incentive program that allows property owners to take a tax credit for money spent creating one or more riparian or littoral buffer strips, which comply with Best Management Practices published by Maine Department of Environmental Protection.

**Background.** This proposal follows closely Maine's existing income tax credit in 36 M.R.S.A. § 5219-C of up to \$200 every ten years, which is available for individual taxpayers who have a professional forest management plan prepared. The proposal is an incentive for landowners to comply with BMP's for creating buffers. Definition and publication of BMP's by DEP would be required. An appropriate dollar figure would be needed based on what would be required to comply with the BMP's. Quality control on the buffer work could be provided by requiring that the taxpayer file a signed supporting statement from an appropriate licensed professional or government official.

The provision requiring a signed agreement to maintain the vegetative buffer for no less than 10 years is analogous to the pledge required to apply for Natural Resource Conservation Service cost-share funds for conservation practices.

An advantage of the income tax incentive is that it would not place a burden on municipalities and would not run contrary to the Constitution, which compels all assessments to be based on "just value" (Article VIII, Section 8), as would a property tax incentive. A disadvantage is that the incentive is not available to property owners whose income is earned in other states or countries, which includes a large number of Maine's seasonal residents of developed waterfront land.

### ***Education***

- ❑ DEP & SPO should educate the general public concerning how buffers work and why they are important.

**Background.** DEP & SPO are currently collaborating on the NPS Awareness Campaign; a marketing consultant, NL Partners, was hired to help guide the agencies' efforts. The first project in the campaign was the "Clean Water Starts With You Campaign" which identified 8 simple steps to water protection, one of which was planting buffers. NL Partners encouraged the team to become more focused with its efforts at which time the team identified the desire to promote the Buffer Strip BMP. The following is a list of activities undertaken by the NPS Awareness Team to promote buffers in since Dec. 1997:

- A strategy was developed by the team and reviewed by NL Partners.
- An Earth Day buffer strip promotion campaign occurred in the March/April time frame. (Media were sent a press release and a list of buffer activities occurring around the state. They were encouraged to contact a group within their viewing or readership area to talk about buffers. A few stations and papers around the state did respond to our suggestion.)
- A press release was sent out in April/May to all newspapers. Over the next few months DEP & SPO staff reported spotting the articles in weekly papers.
- An advertisement was bought in the Portland Sunday Telegram's Home & Garden insert.
- The DEP printed an insert covering a broad range of environmental issues. Land & Water Bureau's section featured "Clean Water Starts with You" and focused on soil erosion and spoke of planting trees & shrubs. The insert appeared in the Portland Sunday Telegram, the Bangor News Weekend edition, and the Kennebec Journal a few weeks prior to Earth Day. The insert was also distributed at the Common Ground Fair and other events.
- Seven TV Public Service Announcements (PSAs) were distributed to stations throughout the state which included information on soil erosion and buffers.
- In May, NL Partners led two focus group discussions on water quality and buffers to help guide the marketing efforts. Results of these focus groups were reported in the Fall 1998 issue of the NPS Times.
- NL Partners developed a set of buffer slogans with input from the focus group in order to better market the idea of preserving buffer strips.

- Contact with Bangor Beautiful, the organization who sponsors the Bangor Garden Show, has been made. DEP is exploring ideas on how to partner with Bangor Beautiful to promote buffers at the April 1999 event.
- A third year of Omnibus Survey data has been collected by Market Decisions. This data is presently being reviewed. The NPS Awareness team will be meeting to further plan buffer promotion based on this & the focus group market research information.
- Other activities by DEP are underway promoting buffer strips:
  - Development of a buffer promotion video.
  - Development of a buffer planting guide.
  - DEP has a new position, Lakes Education Coordinator, who will also be working at promoting buffers.

DEP & SPO plan to continue this NPS Awareness Campaign .

- ❑ DEP should provide information on buffers to contractors and municipal officials.

**Background.** DEP currently provides training for municipal officials, contractors, consultants and others through the NPS Training & Resource Center. DEP collaborates with the State Planning Office to provide training to municipal code enforcement officers. Contractors may apply for certification on erosion & sedimentation control practices after completion of 2 courses. Once certified, continuing education is required. Information on the importance and use of buffer strips can be added to the curriculum.

- ❑ Prospective buyers of property in Shoreland Zones should be provided with a Fact Sheet on Shoreland Zoning prior to signing a contract to purchase the property.

**Background.** When property in a Shoreland Zone changes hands, there is no requirement that the buyer be provided with information on the significance of the Shoreland Zone, including the restrictions on land use activities in the zone, and the reasons for them. A buyer may not realize, for instance, that clearing standards would prevent him/her from legally removing trees or other vegetation, or why maintaining a buffer is important. This information should be provided before a buyer makes a commitment to the property.

- ❑ DEP should provide increased assistance to local planning boards in “priority watersheds” .

**Background.** Priority watersheds have been identified due to threats or impairments from NPS pollution. Within these watersheds, the need exists to provide increased assistance on management within the Shoreland Zones. DEP staff are unable to visit all municipalities within a year, but could give priority to assisting those municipalities located within Priority Watersheds. .

### ***Other***

- ❑ Support/promote coordination between MDOT and DEP in efforts to promote use of MDOT’s BMP’s that relate to buffers on local and private roads
- ❑ Promote coordination with enforcement efforts addressing other land use issues

**Background.** In areas subject to municipal shoreland zoning, it is up to local officials to ensure that the standards in the local ordinance, which include requirements for buffer strips, are upheld. The shoreland zoning ordinance is often more restrictive than standards contained in the Natural Resources Protection Act, administered by the Department of Environmental Protection, which has led to confusion among landowners proposing to do work in these areas. At least one town has made use of a form (see Appendix 2) for landowners to sign to ensure that restrictions in the local ordinance are understood.

The Department concurs that use of such a form is an effective tool to educating landowners about the local standards and will promote its use through its Shoreland Zoning newsletter, which is sent to all towns.

## Discussion of Regulatory Options

### *Amend Shoreland Zoning Option*

- ❑ Require all municipalities to adopt zoning standards for land adjacent to all mapped perennial 1<sup>st</sup> order streams (the watercourse above the confluence of two perennial streams).

#### Pros

- Allows local flexibility; 25 foot distance is a minimum; size of buffer can be tailored to local needs
- Standards can be consistent with rest of shoreland zoning ordinance
- Potential for more effective compliance monitoring and enforcement at the local level than at the state level

#### Cons

- Local mandate; cost incurred for all municipalities to update their ordinances and to administer the program (including enforcement)
- Many municipalities are weak in administering what is already on the books
- Towns not in favor of added mandated responsibility, according to Maine Municipal Association

### *Alternate Shoreland Zoning Option*

- ❑ DEP provides optional model guidelines for municipalities that wish to adopt zoning standards for land adjacent to smaller streams than are covered by Mandatory Shoreland Zoning.

#### Pros

- Option can be pursued in municipalities that have the ability and desire to administer it; i.e., the ordinance will likely be more effective where it is adopted voluntarily than would a state mandate
- Model ordinance standards can be designed that are compatible with rest of shoreland zoning
- Towns would favor an optional program, according to Maine Municipal Association
- Approach allows towns to target areas with greater resource threats using regulatory approach

#### Cons

- Greater inconsistencies in stream protection between towns will occur within the same watershed

**Background.** The Mandatory Shoreland Zoning Act requires municipalities to adopt land use regulations for all areas within the shoreland zone. The shoreland zone consists of areas within 250 feet of the normal high-water line of great ponds, rivers, and tidal waters; within 250 feet of the upland edge of non-forested freshwater and coastal wetlands; and within 75 feet of streams. A river is defined as a free-flowing body of water including its associated flood plain wetlands from the point at which it provides drainage for a watershed of twenty-five square miles to its mouth. For the purposes of the shoreland zoning law a “stream” is a free-flowing body of water from the outlet of a great pond or the confluence of two perennial streams as depicted on the most recent edition of a United States Geological Survey 7.5 minute series topographic map, or if not available, a 15-minute series topographic map, to the point where the body of water becomes a river or flows to another water body or wetland within the shoreland zone. The latter streams are considered 2<sup>nd</sup> order streams; above the confluence, streams are considered 1<sup>st</sup> order.

The land use controls adopted by the municipalities for the above shoreland areas must be consistent with or no less restrictive than the Board of Environmental Protection's *State of Maine Guidelines for Municipal Shoreland Zoning Ordinances*.

Both the Mandatory Shoreland Zoning Act and the Board's Guidelines ordinance require buffer strips to be maintained adjacent to shoreland areas. The width of the buffer varies somewhat based on the water body or wetland and the type of zoning district established. Regardless of the buffer width, the Act prohibits new cleared openings within the buffer except to establish permitted uses. Examples of permitted uses which can result in a cleared opening in the buffer are public boat launching ramps and stream crossings.

Generally, in the first 75 feet from the normal high-water line of a waterbody or the upland edge of a wetland, no "clear-cut openings" (openings in the forest canopy greater than 250 square feet) are permitted, although 40% of the volume of trees 4 inches or more in diameter, measured at 4 1/2 feet above ground level, can be removed in any 10-year period. The cutting must be done such that a well-distributed stand of trees and other vegetation remains. This area is commonly referred as the buffer strip. Adjacent to great ponds and rivers flowing to great ponds, the buffer strip extends for a distance of 100 feet from the normal high-water line.

As noted above, within the buffer area a well-distributed stand of trees and other vegetation must be retained. The Board's guidelines define a well-distributed stand of trees and other vegetation by a "point system." This system, which assigns values to trees down to 2 inches in diameter, requires a certain total value of trees to be maintained in any 25-foot by 25-foot square (625 square feet) area within the buffer strip. A greater number of points are required adjacent to great ponds and rivers flowing to great ponds, than adjacent to other shoreland areas.

Beyond the buffer strip, vegetative cutting limitations are less restrictive. In this area, cleared openings are permitted provided that such clearings do not exceed 25% of the lot area, or ten thousand square feet, whichever is greater. In total, however, no more than 40% of the volume of trees can be removed in any 10 year period from the shoreland zone.

As noted above, clearing standards adjacent to great ponds and rivers flowing to great ponds are more restrictive than adjacent to other waters and wetlands. In addition to the wider (100 foot) buffer and the more restrictive "point system," there is a prohibition on removal of vegetation less than three feet in height within the buffer. There is also a prohibition on any cutting of vegetation within 75 feet of a great pond if it is zoned for Resource Protection, except to remove safety hazards.

It should be noted that there are buffer requirements (usually 75 feet) for small streams (tributary streams), whether intermittent or perennial, which flow through the shoreland zone to a receiving water body or wetland. This buffer requirement does not apply outside the shoreland zone because the standards can only apply to areas within the shoreland zone itself.

Finally, it should be noted that in the heavily developed commercial and industrial districts and in the Commercial Fisheries/Maritime Activities districts, the setback and buffer requirements are reduced to 25 feet or less.

### ***Amend NRPA***

- ❑ For any mapped perennial stream that is not subject to municipal Shoreland Zoning (this covers 1<sup>st</sup> order streams): No cutting/removal of vegetation within 25 feet of the normal high water line except in accordance with Shoreland Zoning standards, without a permit. For mapped intermittent streams: No cutting/removal of vegetation necessary to maintain shading of the stream, without a permit.

#### Pros:

- Should result in protection of aquatic habitat; some water quality benefits.

- In the organized municipalities, NRPA applies to all streams already; area of DEP jurisdiction does not change;
- Streams where this would apply already are mapped, easy to identify;
- Targets only the area not covered by Shoreland Zoning;
- Does not increase burden on municipalities
- Allows for some activity; e.g., limited harvesting; thinning, removal of dead/diseased trees in accordance with existing SZ standards;

Cons:

- Buffer not wide enough to address all habitat and water quality concerns;
- Existing staff at DEP will not be able to do a lot of compliance monitoring and enforcement;

**Background:** First order streams are not covered by mandatory Shoreland Zoning. Maintaining a vegetative buffer within 25 feet of 1<sup>st</sup> order streams will allow for shading, leaf drop and collection of woody debris in the stream, all-important for the aquatic habitat of the stream. The buffer will also reduce erosion potential and can provide for filtering of runoff and nutrient uptake, though this benefit is limited due to the narrow width of the buffer and the tendency for runoff to form a channel before it reaches the buffer.

Soil disturbance adjacent to a stream (within 100 feet) is already regulated under NRPA. Permit by Rule standards apply for disturbances at least 25 feet back; individual permits required for soil disturbance within 25 feet. Thus, most development activities remain 25 feet back from the stream. Removal of vegetation adjacent to streams does frequently occur however, in some cases for purpose of timber harvesting ( a separate work group is now considering recommendations for statewide timber harvesting standards), in many other cases to enhance views to the water.

### ***Amend Stormwater Law***

- ❑ Require maintenance of buffers on streams in “most at risk” watersheds for all development, including residential. Low threshold would have to be established to catch these.

Pros:

- Targets those streams that are identified as most in need of protection;
- Law would be more inclusive by not singling out commercial development;
- Does not increase burden on municipalities;

Cons:

- “Most at risk” streams not yet identified;
- Another law for residential property owners to keep track of in addition to NRPA and Shoreland Zoning;
- Property owners will not automatically know whether or not their stream is in “most at risk” category; a lot of violations due to ignorance;
- New maps would need to be created;
- Will miss a lot of streams that would benefit from having buffer; virtually all 1<sup>st</sup> order streams would benefit;

**Background.** The Stormwater Management Law applies statewide and requires that water quality standards be met in watersheds that are designated either “most at risk” due to new development, or “sensitive or threatened”. In 1997, the DEP adopted, and the Legislature approved, rules that include a list of these watersheds and the standards that have to be met.

A criticism of the Stormwater Law from the business/development community is that treating runoff from new development is only a “drop in the bucket” in terms of the overall problem of nonpoint source pollution in most watersheds. The law does not require treatment of runoff from either development of residential (single family) lots, or from any previously developed sites, commercial or residential.

## Recommendations

1. An income tax incentive program should be created that allows property owners to take a tax credit for money spent creating one or more riparian or littoral buffer strips, which comply with Best Management Practices published by Maine Department of Environmental Protection. Proposed statutory language follows:

### **36 M.R.S.A. § \_\_\_\_\_. Riparian and littoral vegetated buffer income tax credits**

Once every 10 years, an individual is allowed a credit against the tax otherwise due under this Part for the lesser of \$500 or the individual's cost of creating one or more riparian vegetated buffers which comply with Best Management Practices then in effect as published by the Maine Department of Environmental Protection. In no case may this credit reduce the state income tax to less than zero. Those taxpayers claiming this credit must attach a signed statement from a licensed professional forester, licensed landscape architect, or an official of the Maine Department of Environmental Protection, Maine Land Use Regulation Commission, Maine Forest Service, Maine Department of Agriculture, or United States Department of Agriculture Natural Resources Conservation Service, supporting the claim. Additionally, the taxpayers must swear that the credit has not been claimed by them in the previous 10 years and has not been claimed by the taxpayers for work done on the same buffer or buffers at any time in the past, and must include a signed agreement to maintain the vegetated buffer or buffers according to the above-mentioned Best Management Practices for no less than 10 years. For the purposes of this section, the licensed professional forester or licensed landscape architect may not be in the regular employ of the individual. Those taxpayers deducting the cost of creating the buffer as an expense under the Internal Revenue Code must reduce the expense by the amount of the credit. The credit may not be claimed for any costs paid or reimbursed with government cost-share program funds. This credit may be used in any tax year beginning on or after January 1, 1999.

2. State law should require that sellers of property in Shoreland Zones provide prospective buyers with a Fact Sheet on Shoreland Zoning and the Natural Resources Protection Act(to be drafted by DEP) prior to signing a contract to purchase the property.
3. DEP should provide optional model guidelines for municipalities that wish to adopt zoning standards for land adjacent to small streams.
4. NRPA should be amended to regulate cutting of vegetation adjacent to any mapped stream that is not subject to municipal Shoreland Zoning (this covers 1<sup>st</sup> order streams). Cutting or removal of vegetation within 25 feet of the normal high water line of a mapped stream should be prohibited without a permit, except in accordance with Shoreland Zoning standards: 40% of the volume of trees 4 inches or more in diameter, measured at 4 1/2 feet above ground level, can be removed in any 10 year period. The cutting must be done such that a well-distributed stand of trees and other vegetation remains

**Appendix 1: “Agriculture, Forest and Developed Areas Riparian Buffers”** A report presented by Richard A. Claytor, Jr., P.E. of The Center for Watershed Protection for the Maine Department of Environmental Protection on July 28, 1998.

## Appendix 2

### ACKNOWLEDGMENT OF SHORELAND ZONING BUFFER STANDARDS

This sheet provides notification of standards required by the \_\_\_\_\_ Shoreland Zoning Ordinance. By signing this form, the applicant acknowledges understanding of the standards and agrees to comply with them and to notify all others associated with the proposed project of these restrictions. Violation of any of these standards will require the contractor(s) and/or landowner(s) to fully restore any site conditions not in compliance to their pre-construction condition. NOTE: This form summarizes key Ordinance provisions. Other restrictions and Maine DEP requirements also apply. Approval of a DEP permit under the Natural Resources Protection Act does not supersede these standards which in some cases are more restrictive. See section 15 of the Ordinance for information about which activities require a local permit.

The following standards apply within the buffer area (within 100 feet of the normal high water mark of all lakes and rivers, within 75 feet of the normal high water mark of zoned streams and within 75 feet of the upland edge of zoned wetlands. See the official Shoreland Zoning Map for exact boundaries.):

- One winding footpath of no more than six feet in width is allowed for each lot or for each 200 feet of shoreline frontage.
- Structures are not allowed within the buffer area. This prohibition includes storage buildings, boat houses, patios, decks, tents and any portion of a dock extending above the normal high water line.
- Bushes can be trimmed down to three feet in height, but not removed, killed or otherwise damaged.
- In the off-season, docks should be stacked on the footpath to avoid damage to buffer vegetation.
- Fill cannot be brought into the buffer except for path construction or to re-vegetate bare ground as part of an approved re-vegetation plan.
- Trees can be limbed up to one-third of their height.
- Openings or view corridors in existence prior to January 1, 1989 can be maintained but not enlarged.
- Footpaths must be winding in order to provide opportunities for runoff to disperse into the buffer. They cannot be constructed so as to create a view corridor.
- Openings that have "closed" with growth of woody vegetation cannot be "re-opened".
- Grandfathered buildings within the buffer may be expanded if the expansions are no closer to the water body than the original structure. Such expansions of floor area and/or volume are limited to 30% of the floor area and volume in existence as of January 1, 1989.
- Before any construction begins, pre-construction photos should be taken. Silt fence must be properly installed at the upland extent of the buffer area below any construction.
- No disturbance of the ground cover (including the duff and leaf layer) or vegetation shall be caused within the buffer, or between the lake and a grandfathered or new structure. Equipment movement and excavation disturbance must be carefully controlled to avoid any impact on the buffer. For example, it is not legal to locate a foundation at the buffer limit if that placement will cause any disturbance within the buffer. The placement of silt fence at the buffer limit is intended to prevent this problem and satisfy state and local laws.
- Clearing of vegetation and timber harvesting must not remove more than 30% of the volume of trees in lakeshore buffers and more than 40% of the volume of trees in stream protection district buffers during any ten year period. The creation of cleared openings is prohibited and an even forest canopy must be maintained. These provisions may limit the percentage of cut to less than the specified maximums.
- Rights-of-way or other divisions or rights of use cannot be granted unless the parcel in question can retain unencumbered 200 feet of shoreline frontage and 60,000 square feet of area for each existing residential dwelling unit.

Date: \_\_\_\_\_ Signature of Applicant: \_\_\_\_\_ Permit #: \_\_\_\_\_